

square velocity of molecules of the same gas:

$$\sqrt{u^2} = \sqrt{\frac{3RT}{M}}$$

Since γ varies from about 1.15 to 1.66 for common gases, a knowledge of U and the assumption of a value of 1.4 for γ enables the molecular weight of an unknown gas to be estimated at about $\pm 10\%$.

The effect of hydrogen or helium upon the speaking voice is a fine example of the versatility of certain lecture demonstrations. It may be done merely for effect, or for laughter. And why not? Cakes and ale have their place, even in chemistry. But with a little time and effort, it may also be coaxed into yielding much insight into the interconnectedness of natural phenomena. Shakespeare's Jaques

again makes the distinction between the two approaches best:

My lungs began to crow like chanticleer,
That fools should be so deep-contemplative,
And I did laugh sans intermission
An hour by his dial.

to which he counters:

And then he drew a dial from his poke,
And looking on it with lack-lustre eye,
Says, very wisely, "It is ten o'clock;
Thus may we see," quoth he, "how the world wags."

"Seeing how the world wags." There could be worse definitions for the scientific enterprise.

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CHEMTECH INDEX 1980

January 1-64

February 65-128

March 129-200

April 201-264

May 265-328

June 329-392

July 393-456

August 457-520

September 521-584

October 585-648

November 649-712

December 713-776

A

- Ahuja, S.
Ultratrace analyses, 702
- Allard, B.
Nuclear waste storage in Sweden, 211
- Allison, D.
The industrial career, 150
- Anderson, B.
Solve it, 275
- Ashida, K.
Surface composition and catalytic activity, 312
- Asimov, I.
Probable paths to 2080, 12

B

- Baeder, D. L.
Love Canal—What really happened, 740
- Baizer, M. M.
The electrochemical route to adiponitrile—I discovery, 161
- Baker, R. E.
Satisfying the appetites of 1980 cars, 375
- Bartlett, P. L.
A solvent for today's needs, 354
- Bassel, J. M.
Progress in olefin metathesis, 762
- Baston, V. F.
Evaluating wastes as energy sources, 438
- Bauer, R. S.
The versatile epoxies, 692
- Beavers, E.
My son, the chemist?, 525
- Bennett, M.
Reducing the aromatic ring, 444
- Benrey, R.
Taking the heat, 595
- Benson, S. W.
Predicting chemical reactivity, 121
- Bizzi, E. G.
A waterborne coating with portent, 238
- Bun, D. C.
Toxicology of fibers, 436
- Bull, E. S.
The humanities for technologists, 74
- Buss, W. A.
An industrial epidemiology, 298

C

- Callaway, C. J.
The Bank of America's solar energy programs, 3
- Cantrell, J. S.
Sun fun, May OBC
- Chain, E.
Penicillin—the crucial experiment, 474
- Christian, J. D.
What's a big company doing in ACS?, 205
- Costle, D.
Coordinating regulation, 66
- Cramer, R.
A QSAR success story, 744
- Crivello, J. V.
Cationic polymerization initiated by light, 624

D

- Dalton, G. W.
How to stifle a technical organization, 280
- Danly, D. E.
The electrochemical route to adiponitrile—II, 302
- Davenport, D. A.
Weigh it with music, 774
- Davies, D.
Next slide please ..., June OBC
- Davies, R. E.
Cellulose solvents, 51
- deRosset, A. J.
An energy-saving separation scheme, 498
- DeVos, R. M.
Free enterprise, 138
- D'Ianni, J. D.
Sh rages—opp rtunity, 23
- Dickie, R. A.
How paint arrests rust, 31
- Doshi, V. K.
Making bins and hoppers behave, 760
- Dunning, J. D.
Surfactants, 356

E

- Economy, J.
Now that's an interesting way to make a fiber, 240
- Edelson, E.
The joys of science writing, 329

Emert, G. H.

- Gulf's cellulose-to-ethanol process, 610
- Ettinger, M. B.
More on retirement, 78

F

- Farrell, J. D.
Why red tape?, 592
- Fenton, D.
Think around problems, 26
- Fine, L. J.
An industrial epidemiology, 298

G

- Gaensslen, H.
The "coal or oil" decision, 563
- Gale, L. G.
Evaluating wastes as energy sources, 438
- Garfield, E.
The hazards of sunbathing, 337
- Gates, B. C.
Catalysis by supported metal clusters—I, 195
Catalysis by supported metal clusters—II, 248
- Giragosian, N. H.
A case of commercial development: Loctite, 604
- Giurgea, C.
A drug for the mind, 360
- Good, R. J.
Surface chemistry and search vs. research, 100
- Gordon, W. J. J.
Discovery by analogy, 166
- Granville, M. F.
In the spirit of cooperation, 720
- Gross, P.
Toxicology of fibers, 436
- Gumbleton, J. J.
Catalysts, computers, and cars: a growing symbiosis, 630

H

- Hahn, G. J.
Planning experiments: an annotated bibliography, 36
Retrospective studies versus planned experimentation, 372
- Hall, R. H.
Whither nutrition?, 546

Hammer, R. B.
Cellulose solvents, 51

Harrison, L.
Searching for "malapophors", Aug. OBC

Hartley, F. R.
Homogeneous catalysis: a meeting report, 686

Hasegawa, N.
As Japan matures, 333

Hazlitt, H.
Lessons of hyperinflation past, 464

Hegedus, L. L.
Catalysts, computers, and cars: a growing symbiosis, 630

Hendrix, C.
Through the response surface with test tube and pipe wrench, 488

Hergert, H. L.
Cellulose solvents, 51

Holmes, J. T.
Sun power, 514

Holy, N. L.
Who needs phosphines to tie down catalysts?, 366

Howe-Grant, M.
Weigh it with music, 774

Hsu, T. A.
Alcohol from cellulose, 315

Huffman, G. P.
How Mossbauer spectroscopy earns its way, 504

Huggins, M. L.
The hydrogen bond and other reminiscences, 422

Hurl, B.
Evaluating wastes as energy sources, 438

Hyman, R.
Solve it, 275

I

Isaacs, J. D.
Challenges of a wet planet, 141

J

Jensen, R. H.
An energy-saving separation scheme, 498

Jewkes, G.
How to stifle a technical organization, 280

Jones, R. F.
The art of scientific glassblowing, 218

K

Kaback, S. M.
Patents—keys to knowledge, 172

Kadlec, E.
A wind turbine, 324

Kastens, M. L.
The coming food industry, 215
The coming eating revolution, 726

Katzen, R.
Gulf's cellulose-to-ethanol process, 610

Kaye, B. H.
Standard fineparticles—Who needs them?, 40

Keeton, C. L., III
Needed: an employee stock ownership plan to beat inflation, Oct. IBC

Kirsch, A. S.
"Reflections on Phlogiston", 722

Kirschman, R.
The *Mother Jones* chemical consciousness quiz, 200

Kumkumian, C.
Ok, your candidate drug has activity. Now what?, 178
Ok, your candidate drug has activity. Now what?—II, 233

L

Ladisch, M. R.
Alcohol from cellulose, 315

Lamberg, L.
Beastly bee stings, 264

Leconte, M.
Progress in olefin metathesis, 762

Lee, B. S.
View from the top, 269

Lee, F. F.
Teaching entrepreneurship, 223

Lemlich, R.
Making bins and hoppers behave, 760

Lichtin, N. N.
Fixing sunshine abiotically, 252

Lieberstein, S. H.
How to keep a trade secret, secret, 598

Lieto, J.
Catalysis by supported metal clusters—I, 195
Catalysis by supported metal clusters—II, 248

Likholobov, V. A.
Polyols from formaldehyde, 643

Lodge, J. P., Jr.
The environment of China, 730

Luberoff, B. J.
Let's hear it for the '80s, 1
What am I bid for this person?, 65
Who's running this life, anyway?, 129

The winner, 136
An economic fable, 201
On winners and losers, 265
Way out?, 348
Wow, I never saw that before!, 393
Yield, 457
Think on these, 512
I know. Why didn't you tell me?, 521
The numbers racket, 585
Work smarter, 649
Interfacial tension—cause and relief, 713

Lynch, F. E.
Metal hydrides make hydrogen accessible—I, 578
Metal hydrides make hydrogen accessible—II, 768

M

Malpas, R.
Ok, just where is the CPI?, 558

Marvel, C. S.
My 69 years of chemistry, 8

Matsuyama, M.
Surface composition and catalytic activity, 312

Matthews, T.
The challenge of oil field chemicals, 756

Meschel, S. V.
Chemistry and archaeology: a synergism, 404

Monson, R. R.
An industrial epidemiology, 298

Morris, A. J.
Continuing education: its return on investment, 470

Murthy, K. S.
Environmental assessment of fluidized-bed combustion systems, 58

Mussinan, C.
Analytical chemistry and flavor creation, 618

N

Neuzil, R. W.
An energy-saving separation scheme, 498

Nishiyama, Y.
Wall effects during thermal reactions, 680

Norton, B.
Atomic roulette, 412

O

Ohm, R. F.
Polynorbornene: the porous polymer, 183

P

Parkash, S.
Determining surface area, 572

Parliment, T. H.
The chemistry of aroma, 284

Payne, P. R.
Which material uses the least energy?, 550

Pertschuk, M.
The king's dilemma, 526

Peters, J. M.
An industrial epidemiology, 298

Pogany, G. A.
Are you working for the filing cabinet?, 656

R

Rabinow, J.
Another inventor's view on innovation, 144

Ranftl, R. M.
R&D productivity, 661

Richards, G. F.
Technologists need liberation, 586

Roberts, E. B.
What do we really know about managing R&D?, 156

Rochow, E. G.
My friend silicon, 532

Rosback, D. H.
An energy-saving separation scheme, 498

Rosen, C. L.
What's holding back electric cars?, 658

Ross, D. W.
Different methods give different results, 181

Ross, R. D.
Burn, hazardous waste, burn, 708

Rousseau, R. W.
Crystallization: a review of recent developments, 566

Rydberg, J.
Nuclear waste storage in Sweden, 211

S

Saffer, A.
Sources of technology, 670

Sakharov, M. M.
Polyols from formaldehyde, 643

Salsbury, J.
Industrial research and innovation, 401

Saltman, P.
Your ethics ... or mine?, 528

Schmidt, K. D.
Negotiating in foreign territory, 90

Seeger, P.
I'm gonna be an engineer, 64

Selby, C. C.
Managing "volunteers" and their organizations, 417

Semenov, A. N.
Antispark equipment, July OBC

Shapiro, I. S.
We need more nuclear power, 650

Silverfine, L.
The Great Flag, 402

Simmonds, W. H. C.
Technology to the rescue, 290

Smith, A. G.
How paint arrests rust, 31

Snape, E.
Metal hydrides make hydrogen accessible—I, 578
Metal hydrides make hydrogen accessible—II, 768

Snyder, L.
Solutions to solution problems—2, 18

Socha, R. F.
Polyols from formaldehyde, 643

Srinivasan, V.
Weigh it with music, 774

Stallings, J. W.
Evaluating wastes as energy sources, 438

Starks, C.
Selecting a phase transfer catalyst, 110

T

Takeuchi, T.
Surface composition and catalytic activity, 312

Tamai, Y.
Wall effects during thermal reactions, 680

Teague, J. R.
An energy-saving separation scheme, 498

Thompson, P. H.
How to stifle a technical organization, 280

Tsao, G. T.
Alcohol from cellulose, 315

Turbak, A. F.
Cellulose solvents, 51

U

Ukihashi, H.
A membrane for electrolysis, 118

Usmani, I. H.
An energy option, 94

V

Verma, A.
Use medium-Btu gas, 382

W

Walker, J.
Chemical systems that oscillate, 320

Weidenbaum, M.
America's greatest growth industry, 294

Weiss, A. H.
Polyols from formaldehyde, 643

Weissberger, A.
A climate for innovation, 340

Weisz, P. B.
Of sacred cows and energy, 7
Societal kinetics, 71
Population and energy, 131
Golden ideas—sobering science, 207
The interdisciplinary tetrakaidekahedra, 270
Net energy: intentions—good, results—confusing, 397
From bits to brains, 589
Not all Btu's are equal, 653
Hidden in plain sight, 721

Werner, E. G. G.
Whence tomorrow's petrochemicals, 430

Westheimer, F. H.
Models for enzyme systems, 748

Whitehurst, D. D.
Catalysis by heterogenized transition-metal complexes, 44

Whorton, J. C.
Towards rational therapeutics, 540

Williams, H., Jr.
Energy savings—the easy way, 648

Williams, J. E.
What does it really cost?, 226

Wing, M.
Why not crack crude?, 20

Wolff, M.
What do we really know about managing R&D?, 156

Y

Yoshida, J. A.
Sources of technology, 670

Young, C.
Evaluating wastes as energy sources, 438

Young, J. A.
The safety audit, 674

Z

Zaffaroni, A.
Delivering drugs, 82

Zollinger, H.
On shirts and things, 461

S
fc
a

